

## Breath Stacking: A Guide for Community Physiotherapists

Your patient has been provided with a breath stacking system by Beaumont Hospital. This document is intended to guide qualified physiotherapists on the use of breath stacking. Breath stacking can be used routinely to maintain/ improve airway compliance and to facilitate airway clearance.

### Indications

Patients with neuromuscular diseases often present with weakness of the respiratory muscles which can compromise the respiratory system. Specifically there can be reduced inspiratory effort, peak expiratory flow and peak cough flow. Breath stacking enables a deep inhalation thus facilitating higher peak expiratory flow and peak cough flow. This can facilitate airway clearance which is vital for preventing respiratory tract infection.

Lung and chest wall compliance reduces over time in NMD's. Breath stacking can help to maintain flexibility of these structures when practiced regularly.

Equipment:



Figure 1.0 equipment required

- Ambu bag
- One-way valve
- Two green connectors
- Face mask



Figure 2.0 Full circuit ready for use



Figure 3.0 One way valve with arrows/flow towards patient

## Breath Stacking Technique

- Ask the patient to take a deep breath **IN** and simultaneously squeeze the bag.
- The patient should hold the breath **IN** (the 1-way valve will help this).
- The patient should try to take another breath **IN** on top of their deep breath while you simultaneously squeeze the bag again.
- This can be repeated 3-5 times until the patient gets a full deep satisfactory breath **IN**.
- The patient can then breath **OUT** or cough.

A breath stacking cycle is 3- 4 breaths **IN** followed by a breath **OUT** or a cough.

A set is the number of cycles you wish the patient to complete.

The frequency per day will be advised by the prescribing physiotherapist. This could be between 3-5 sets 2-3 times a day.

## Assisted Cough

If the patient has a weak cough, breath stacking can be accompanied by an assisted cough i.e. an abdominal thrust or a thoracic squeeze.

## Evidence

Senent C et al (2011). A comparison of assisted cough techniques in stable patients with severe respiratory insufficiency due to amyotrophic lateral sclerosis (ALS). *Amyotrophic Lateral Sclerosis* 2(1):26-32.

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